dimensions of the furnace heating chamber are affected (Fig. 36), but the level of the lower free surface of the stream of gases remains at the hearth of the furnace, and the furnace continues to work well. The gases, however, remain in the heating chamber a longer time and a better transfer of their heat to the material being heated is obtained. The temperature of the gases leaving the furnace and, accordingly, the temperature of the material being heated, are different.

In this manner it is not difficult to pass from the consideration of the continuous or gradual reheating furnace to that of the chamber type of furnace. Fig. 37 shows a type of furnace intermediate between the ordinary reheating furnace and the chamber

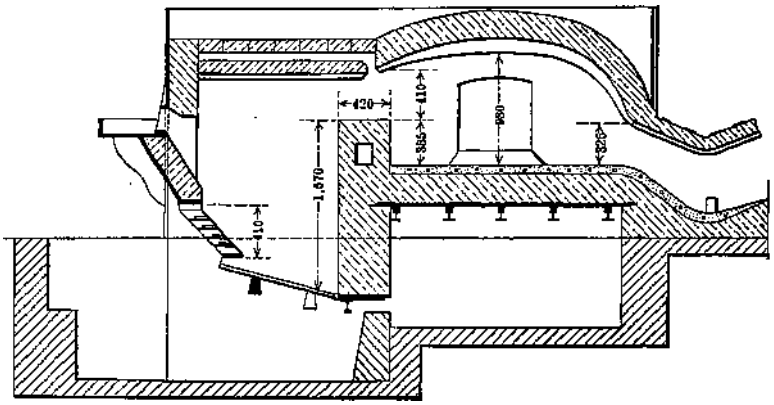

FIG. 37.

type of furnace. This is a reheating furnace at the Pouliloff works; it is very short and has a high roof permitting very large ingots to be placed upon its hearth.

Figs. 38 and 39 show the arrangement of a kiln for the burning of silica brick, designed by the author. This is a multiple-chamber furnace (Siemens system); the gas and the air enter and the products of combustion leave the heating chamber at the hearth level. The hot products of combustion rise to the roof of the chamber, and, as they gradually lose their heat, descend towards the hearth and then pass through the flues leading to the regenerators. The furnace chamber is constantly filled with flame,

and the hearth is always in contact with the hot gases. The design may be